Remarks/Arguments

In the specification, the typographical error noted for the paragraph spanning pages 9, 10 and 11 can clearly be confirmed by reference to the corresponding Figure 4.

The paragraph spanning pages 11 and 12 has been amended to correct an obvious editorial issue that the Examiner noted to bring the corresponding phrases into agreement with the rest of the description in the specification and the claims.

Claims 1-14 are currently pending in this application. Claims 11 and 12 have previously been withdrawn as not being readable on the elected species, though Claims 11 and 12 should be allowable upon a finding of allowance of a generic independent claim. Claims 1-10, 13 and 14 currently stand rejected.

The drawings are objected to under 37 CFR 1.83(a). The Examiner asserted that the drawings must show every feature of the invention specified in the claims; asserting that Claims 8, 9 and 13 must be shown or the features cancelled from the claims.

Claim 8 calls for a first set of dimples and springs located on the walls of the main support grid cells for supporting the fuel rods and a second set of dimples and springs located on the walls of the auxiliary grid support cells for supporting the fuel rods wherein the second set of dimples and/or springs on the auxiliary cells have a larger contact area with the fuel elements than the first set of dimples and/or springs on the walls of the main support grid cells. Figure 5 shows the dimple spring arrangement of the main support grids wherein the springs are on a diagonal. In contrast, the outer strap 72 of the auxiliary grid 68 shown in Figure 6 clearly shows the springs 86 of the auxiliary grids are vertical. The description in the specification starting on line 29 of page 11, describes that the auxiliary grids provide for a larger contact area between the dimples/springs

and the fuel elements than are provided by the corresponding contact areas on the main support grids 46. There is no requirement that the patent drawings be drawn to scale, and these features are clearly shown.

Claim 9 calls for the fuel assembly of Claim 8 wherein the dimples and/or springs on the walls of the respective auxiliary grid support cells are co-planar. Referring to Figure 6, it can clearly be seen that a common plane intersects both the vertical springs and the dimples, which is not the case in the main support grid design.

Claim 13 recites that the auxiliary grid is mechanically or metallurgically affixed to at least some of the guide tubes. The amended Figure 6 clearly shows the guide tube through an auxiliary grid attached at the cell corners by butt-welds. Accordingly, amended Claim 6 should cure the Examiner's objections to the drawings.

In paragraph 4 of the Office Action, Claims 1-10, 13 and 14 are rejected under 35 USC § 112, second paragraph, as being indefinite. The amendments to the specification and claims should clearly overcome these objections.

In paragraph 7 of the Office Action, Claims 1-7, 9 and 13 are rejected under 35 USC § 102(b) as being clearly anticipated by Dailey. The Examiner noted Figures 2 and 3 and lines 10 et sec. in support of this rejection.

Claim 1, the only independent claim under consideration, has been amended to more particularly specify that the main support grids have a first fuel rod support assembly and the auxiliary grid has a second fuel rod support assembly wherein the first and second fuel rod support assemblies are of a different design. Dailey describes a method for repairing bent mixing vanes in a nuclear reactor fuel assembly and apparatus for making such a repair. In Figure 2, there is shown the skeleton of a fuel assembly that includes thin fuel support grids 31 and thicker fuel support grids 32, each

generally characterized by the reference character 30. The support arrangement for the reference character 30, which applies to both types of grids, is shown in Figure 3. Accordingly, both types of grids include the same fuel support arrangement. Therefore, applicants' amended Claim 1 should not rightfully be considered anticipated or obvious over the teachings of Dailey.

In paragraph 8 of the Office Action, Claims 1-6, 13 and 14 are rejected under 35 USC § 102(b) as being anticipated by Oyama et al. In support of this rejection, the Examiner noted Figures 4-10 and asserted that Figures 9 and 10 showed the guide tabs recited in applicants' Claim 14. Oyama et al. address a fuel grid vane pattern for balancing hydraulic forces on a fuel grid. The only fuel rod support assembly shown is illustrated in Figures 10 and 11, but does not show a different fuel rod support assembly at different axial grid locations. I could not find any discussion of the grid fuel rod support assembly or Figures 10 or 11 in the specification of Oyama et al. Accordingly, applicants' claims should not rightfully be considered anticipated or obvious over the teachings of Oyama et al.

In paragraph 9 of the Office Action, Claims 1-6, 8-10, 13 and 14 were rejected under 35 USC § 102(b) as being anticipated by Anthony. In support of this rejection, the Examiner noted Figures 1-6, col. 4, lines 39 et sec., col. 6, lines 26-50, col. 7, lines 20 et sec., and col. 8, lines 56 et sec. of the specification.

Anthony teaches the use of a stronger steel seismic grid which is centrally located axially along the fuel assembly. The remaining grids are pretty much of a conventional design employing a dimple and spring arrangement to appropriately align the fuel rods. The central seismic grid is shown in Figure 5 and includes three to four fuel rods in each cell. The Examiner is obviously equating the central seismic grid of

Anthony to the auxiliary grid of applicants' claim. However, applicants' claim clearly describes the auxiliary grid as comprising a plurality of support cells with one support cell for each fuel element. Accordingly, applicants' Claim 1 and the claims which depend thereon, shouldn't rightfully be considered as anticipated or obvious over Anthony.

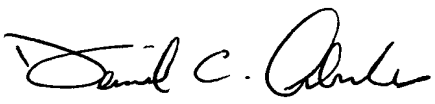
In paragraph 10 of the Office Action, Claims 1-9, 13 and 14 are rejected under 35 USC § 102(b) as being anticipated by Canat et al.(I). In support of this rejection, the Examiner noted the drawings and columns 1, 4 and 6. The Examiner asserted that Figures 1, 6, 7 and 11 show the features of applicants' Claim 14. Canat et al. teaches employing an additional mixing grid that is not as thick as the normal support grids and does not include an outer strap that could otherwise support the guide tabs called for in Claim 14. Furthermore, the tabs shown in the quoted figures are present on the lowermost grid 20 and the regular support grids 24, but do not appear on the mixing grid 26, which is clearly described as not containing an outer strap. The uppermost and lowermost grids 20 and 22 are described in col. 4 as having different contact forces on the control rods than the central structural grids 24. However, the teaching in col. 4 is that the peripheral grids 20 and 22 have stronger forces applied to the control rods than the intermediate structural grids 24, which is contrary to that taught by applicants in applicants' amended Claim 1. Accordingly, the reference to Canat et al. actually teaches away from applicants' claimed elements. Accordingly, applicants' claims patentably distinguish over the reference for the foregoing reasons as well as the individual limitations that they introduce.

In paragraph 11 of the Office Action, Claims 1-10, 13 and 14 are rejected under 35 USC § 102(b) as being anticipated by Doshi. The Examiner asserted that the annular grid has one support cell for each fuel element extending therethrough.

However, that description is contrary to the teachings of Doshi, which provide in the abstract that "Each annular grid defines a plurality of cells being less in number than the multiplicity of fuel rods of each fuel assembly in the outer group, but at least equal in number to the plurality of fuel rods positioned about the periphery of each such fuel assembly". Thus, the peripheral rods within the fuel assembly have individual cells, but the interior rods are all contained within the same cell, which is the reason it is referred to as an annular fuel assembly. Applicants' Claim 1 specifically requires that the auxiliary grid have one support cell for each fuel element. Accordingly, applicants' claims should not rightfully be considered as anticipated or obvious over Doshi. The objection raised in paragraph 12 of the Office Action should be cured by the enclosed amendments.

In view of the foregoing, reconsideration, allowance and passage to issue of applicants' Claims 1-5, 7 and 9-14 are respectfully requested.

Respectfully submitted,



Daniel C. Abeles
Reg. No. 25,822
Attorney for Applicant
724.337.2768

Amendments to the Drawings

The attached sheet of drawings include changes to Figure 6. This sheet, which includes Figure 6, replaces the original sheet including Figure 6. In Figure 6, the previously omitted control rod guide tube showing corner welds to the grid cell has been added. Support for this addition may be found on page 11, starting at line 9 et sec.

Attachment: Replacement Sheet
Annotated sheet showing changes in red.

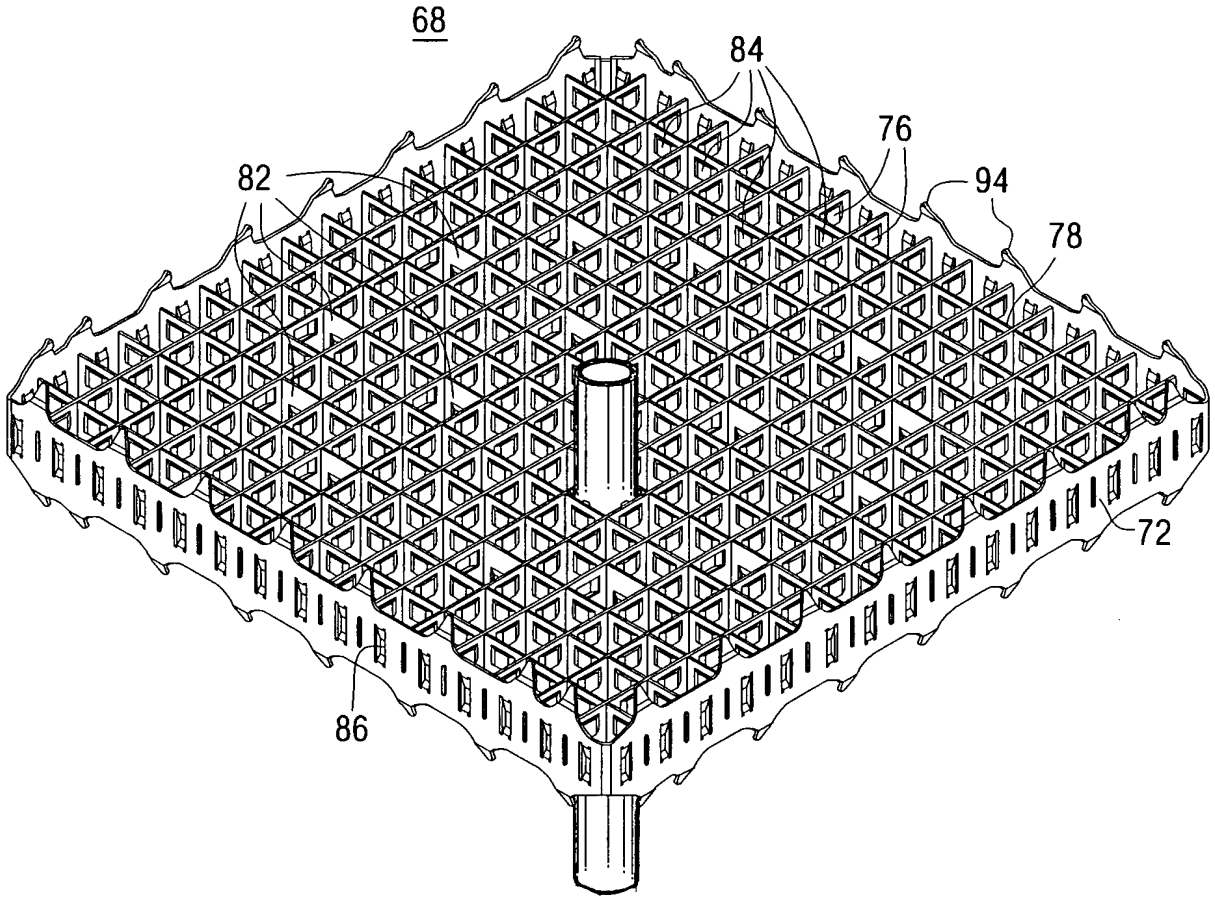


FIG. 6